Clinical Outcomes of Geriatric Care in Cipto Mangunkusumo Hospital, Before and After the Implementation of National Health Insurance Program

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ABSTRAK

Latar belakang: *jaminan kesehatan nasional telah diberlakukan sejak Januari 2014. Berbagai keluaran perawatan pasien geriatri, misalnya perbaikan status fungsi dan kualitas hidup, belum pernah dinilai sebelumnya. Perawatan di rumah sakit yang lama dan kejadian rawat inap ulang di rumah sakit berpotensi mempengaruhi efisiensi keperawatan kelompok yang rentan ini. Tujuan dari penelitian ini untuk mengenali perbedaan perbaikan status fungsi, perbaikan kualiltas hidup, lama rawat inap di rumah sakit dan perawatan di rumah sakit pada pasien-pasien geriatri yang dirawat di RSCM sebelum dan sesudah program JKN diterapkan.* ***Metode:*** *suatu penelitian kohort dengan kontrol historis pada pasien-pasien geriatri yang dirawat di Bangsal Geriatri Akut RSCM dilakukan dalam dua periode waktu: Januari–Desember 2013 (sebelum penerapan JKN) dan Juni 2014–Mei 2015 (setelah penerapan JKN). Pasien yang meninggal dalam waktu 24 jam setelah rawat inap dan pasien dengan skor APPACHE II >24, dengan kanker stadium lanjut, dipindahkan ke bangsal lain sebelum keluar dari rumah sakit atau pasien tanpa rekam medik yang lengkap disingkirkan dari penelitian. Data demografi, karakteristik klinik, status fungsional, kualitas hidup, lama rawat inap dan rawat inap ulang didapat dari rekam medik pasien. Perbedaan keluaran yang diteliti dianalisis menggunakan uji t atau uji Mann-Whitney.* ***Hasil:*** *terdapat 102 subjek pada kelompok praJKN dan 135 subyek pada kelompok JKN dalam penelitian ini. Nilai median lama perawatan tidak berbeda antara kedua kelompok (12,5 hari pada kelompok pra-JKN dan 10 hari pada kelompok JKN, p=0,087), meskipun demikian proporsi pasien dengan lama rawat inap di RS kurang dari 14 hari tampak lebih tinggi pada kelompok JKN. Perbedaan status fungsional pasien yang keluar dari rumah sakit pada kelompok pra-JKN dan kelompok JKN adalah 3 dan 3 (p=0,149) untuk masing-masing kelompok; sedangkan untuk kualitas hidup terkait kesehatan, meskipun kelompok JKN pada awalnya menunjukkan kualitas hidup yang lebih rendah daripada kelompok pra-JKN (0,163 [0,480] dibandingkan 0,243 [0,550]; p=0,012), tetapi setelah dilakukan Pengkajian Paripurna pada Pasien Geriatri (P3G)/ comprehensive geriatric assessment (CGA), terdapat perbaikan kualitas hidup yang bermakna saat akhir perawatan di rumah sakit pada kedua kelompok. Insidens rawat inap ulang pada kelompok JKN lebih rendah daripada kelompok praJKN 7 [5,2%] dibandingkan 13 [12,7%]; p=0,038).* ***Kesimpulan:*** *penelitian ini menunjukkan bahwa tidak terdapat perbedaan bermakna dalam hal lama rawat inap, status fungsional serta kualitas hidup terkait kesehatan antara sebelum dan sesudah penerapan Jaminan Kesehatan Nasional pada pasien geriatri yang dirawat. Insidens rawat inap ulang tampaknya lebih baik pada kelompok JKN sehingga penerapan JKN menjadi lebih disukai.*

Kata kunci: *jaminan kesehatan nasional (JKN), keluaran layanan klinis, ilmu geriatri.*

ABSTRACT

Background: *the National Health Insurance (NIH/JKN) has been enacted since January 2014. Various outcomes of geriatric patient care, such as improved functional status and quality of life have not been evaluated. Prolonged hospitalization and re-hospitalization are potentially affecting the efficiency care of this vulnarable group. This study aimed to identify the differences of functional status improvement, quality of life improvement, length of stay, and hospitalization of geriatric patients admitted to CMH between prior to and after NHI implementation.* ***Methods:*** *a cohort study with historical control was conducted among geriatric patients admitted to Acute Geriatric Ward CMH Hospital on two periods of time: January-December 2013 (pre-NHI implementation) and June 2014-May 2015 (after NHI implementation). Patients who died within 24 hours of hospital admission, those with APPACHE II score >24, advance stage cancer, transfer to other wards before they were discharged or have incomplete record were excluded from the study. Data on demographical and clinical characteristics, functional status, quality of life, length of stay, and re-hospitalization were taken from patient's medical record. The differences of studied outcomes were analyzed using t-test or Mann-Whitney test.* ***Results:*** *there were 102 subjects in pre-NHI and 135 subjects in NHI groups included in the study. Median lengths of stay were not different between two groups (12.5 days in pre-NHI and 10 days in NHI groups, p=0.087), although the proportion of patients with in-hospital stay less than 14 days was higher in NHI group. The difference of functional status of discharged patients in pre-NHI and NHI groups were 3 and 3 (p=0.149) respectively, whereas for health-related quality of life, although NHI group in the beginning showed a lower quality of life compared to the pre-NHI (0.163 [0.480] vs. 0.243 [0.550]; p=0.012). However, after incorporating comprehensive geriatric assessment (CGA) the quality of life improved significantly by the end of in-hospital care in both groups. Re-hospitalization incidence in NHI group was lower compared to pre-NHI (7 [5.2%] vs. 13 [12.7%]; p=0.038).* ***Conclusion:*** *our study shows that there was no significant difference regarding length of stay, functional status, and health-related quality of life between prior to and after national health insurance implementation on admitted geriatric patients. Rehospitalization incidence showed better results in NHI group and hence NHI implementation is favored.*

Key words: *national health insurance (NHI), clinical service outcome, geriatrics.*

INTRODUCTION

National Health Insurance (NHI) that has been implemented since January 2014 in Indonesia is an adaptation of casemix system from United Nation University International Institute for Global Health (UNU-IIGH), which goes by the name INA-CBG (Indonesia case-based group). In the NHI system implementation, different from the pre-NHI period, the remittance is made to the hospital according to the diagnosis and patients' participation in the NHI program; the available diagnosis corresponds to the type of illness included in Indonesia's disease database (INA-CBG).[1] The resources and overall cost of a diagnosis and treatment are sealed in a package (prospective payment system) and NHI will only pay/reimburse the use of resources in accordance with the pre-determined agreement. The excess financial burden is charged to the hospitals and could detriment hospital's finances and worsens if resources are not used in compliance to its indication.

The payment system during the NHI era described above, potentially reduce the quality of services, especially in vulnerable geriatric patients. Moreover, the grouping of diseases on geriatric patients in INA CBG is not the same as in young adults and is often absent in the INA CBG diagnostic group lists, thus raising the possibility of undercoding and undercosting.

Increasing number of geriatric patients demands special attention. In accordance with the physiology of aging, comorbidity, immunologic and homeostasis derangement of this specific group is susceptible to complications causing potentially prolonged hospital length of stay and re-hospitalization occurence. Comprehensive Geriatric Assessment (CGA) is the main approach that has been proven to improve length of stay, functional status, quality

of life, and rehospitalization and has become standard procedure in RSCM; which should not be influenced by insurance policy. This prospective financing insurance system hopes to improve efficiency but on the other hand there is an increasing concern affecting physicians' clinical decissions and in turn affect outcome.[2] This study aims to look at the difference of length of stay, functional status, health related quality of life and rehospitalization between pre-NHI and NHI implementation.

METHODS

A cohort study with historical control design was conducted among geriatric patients admitted to Acute Geriatric Ward, Cipto Mangunkusumo Hospital, Jakarta. The pre-NHI cohort (control group) was patients who were admitted before the implementation of NHI (January 2013 – December 2013) and the NHI cohort was those who were admitted after NHI implementation (June 2014 – Mei 2015). Inclusion criteria was age > 60 years old, admitted with one or more geriatric syndrome. Patients excluded if patient died within 24 hours of hospital admission, APACHE II score > 24, advanced stage cancer patients, transfered to other wards prior to study completion or have a incomplete record.

Data regarding methods of payment, length of stay, change in functional status (measured using ADL score), rehospitalization, and quality of life (measured using EQ5D) were taken from medical records.

Difference of length of stay, change in functional status (meassured using ADL score), rehospitalization and EQ5D between groups were compared using t-test or Mann-Whitney test. Ethical approval letter number from FKUI RSCM Ethics Committee was 985/H2.F1/ETIK/2014.All data is strictly confidential.

RESULTS

Of 102 subjects in pre-NHI cohort and 135 subjects in NHI cohort were included in the study. There was no significant difference between these two cohort regarding importants characteristics except sex (more female on NHI cohort) and number of geriatric giants (more patients in NHI cohort have >5 geriatric giants). **Table 1** shows the comparison of characteristics between two cohorts.

Table 2 shows the differences of outcomes between pre-NHI and NHI cohorts. The median length of stay in pre-NHI geriatric patients was longer 2.5 days compared to NHI cohort, but did not attain statistically significant. Although, the proportion of patients with length of stay equal to or less than two weeks was higher in NHI group compared to pre-NHI. Improvement in functional status score at the time of hospital discharge was no difference between the two groups, whereas for health related quality of life although NHI group in the begining showed a lower quality of life compared to the pre-NHI but by the end of in-hospital care, patients improved and reached equal quality of life score in both groups. Incidence of rehospitalization in NHI group was lower significantly compared to pre-NHI group.

Comprehensive Geriatric Assessment (CGA) process was observed through medical document tracing which revealed incomplete documentation of all CGA components. Furthermore, not only the outcome of geriatric patients treated with the CGA principle but the aspects of the CGA process are also important. **Table 3** shows some of the comprehensive geriatric assessment incorporated in healthcare service process recorded in medical records.

DISCUSSION

National Health Insurance (NHI) is a novel program implemented for every hospital in Indonesia and various medical services have been set with the barrier discovered throughout. Observation has been done six months following the NHI implementation to anticipate and overcome the main problem which might affecting healthcare services. Comprehensive geriatric assessment process requires diligence, thoroughness and consistency to be implemented according to patients' needs. The most challenging component is the interdisiplinary approach on all levels, starting from managing emergency conditions, acute hospital care management until rehabilitation program implementation.[3]

Table 1. Subjects characteristics

Characteristics	Method of payment	
	Pre-NHI (N=102)	NHI (N=135)
Age (years), median (IQR)†	69.6 (10.76)	69.0 (11.05)
Age category (years), n (%)		
- 60-69	53 (52.0)	72 (53.3)
- 70-79	38 (37.3)	49 (36.3)
- ≥ 80	11 (10.8)	14 (10.4)
Sex, n (%)		
- Male	49 (48.0)	38 (28.1)
- Female	53 (52.0)	97 (71.9)
Occupation, n (%)		
- Government employee	1 (1.0)	1 (0.7)
- Private sector	5 (5 (4.9)	17 (12.6)
- Retired	28 (27.5)	17 (12.6)
- Unemployed	51 (50.0)	91 (67.4)
- No data	17 (16.7)	9 (6.7)
Education, n (%)		
- Elementary school	24 (23.5)	19 (14.1)
- Middle school	12 (21.6)	23 (17.0)
- High school	20 (19.6)	6 (4.4)
- No data	36 (35.3)	87 (64.4)
Method of payment, n (%)		
- Askes	44 (43.1)	0 (0.0)
- Jamkesmas	2 (2.1)	0 (0.0)
- Jamkesda	5 (4.9)	0 (0.0)
- KJS	39 (38.2)	0 (0.0)
- Cash	7 (6.9)	0 (0.0)
- NHI	0 (0.0)	134 (99.3)
- other	2 (2.0)	1 (0.7)
- No data	3 (2.9)	0 (0.0)
Number of geriatric giants, n (%)		
- 1-4	87 (75.7)	86 (63.7)
- 5-10	27 (23.5)	49 (36.3)
- No data	1 (1.0)	0 (0.0)
Geriatric giants, n (%)		
- Delirium	34 (33.3)	48 (35.6)
- Postural instability/fall	53 (52.0)	109 (80.7)
- Mild Cognitive Impairment	6 (5.9)	7 (5.2)
- Depression	1 (1.0)	6 (4.4)
- Urinary incontinence	27 (26.5)	64 (47.4)
- Bowel Incontinence	16 (15.7)	39 (28.9)
- Immobility	54 (52.9)	113 (83.7)
- Demensia	9 (8.8)	11 (8.1)
- Malnutrition	25 (24.5)	31 (23.0)
- Hearing impairment	31 (30.4)	39 (28.9)
- Visual Impairment	45 (44.1)	56 (41.5)
- Pressure ulcers	19 (18.6)	22 (16.3)
APACHE II score, median (IQR)†	12 (9.00)	12 (6.00)

† Interquartile range; ‡ New York Heart Association Functional Classification

Table 2. Comparison of length of stay, functional status score, quality of life score and rehospitalization of Pre-NHI and NHI geriatric patients

Outcome	Method of payment		p
	Pre-NHI (N=102)	NHI (N=135)	
Length of stay (days), median (IQR)	12.5 (13.00)	10.0 (10.00)	0.087§
Length of stay category (days), n (%)			
- ≤14	56 (54.9)	94 (69.6)	0.142**
- 15-28	33 (32.4)	29 (21.5)	
- 29-42	12 (11.8)	11 (8.1)	
- ≥43	1 (1.0)	1 (0.7)	
Functional status, median (IQR)			
- ADL score at onset of illness	20.0 (2.00)	20.0 (5.00)	0.149§
- ADL score on admission	7.0 (9.00)	5.0 (9.00)	
- ADL score at hospital discharge	11.5 (11.00)	9.0 (16.00)	
- ADL score difference	3.0 (7.00)	3.0 (6.00)	
Change in functional status n (%)‡			
- ADL score increase	68 (66.7)	82 (60.7)	
- Invariable ADL score	23 (22.5)	25 (18.5)	
- ADL score decrease	11 (10.8)	28 (20.7)	
Quality of life score, median (IQR)			
- EQ5D score on admission	0.243 (0.550)	0.163 (0.480)	0.778§
- EQ5D score at hospital discharge	0.675 (0.239)	0.675 (0.726)	
- EQ5D score difference	0.140 (0.450)	0.134 (0.512)	
Change in quality of life n (%)‡			
- EQ5D score increase	73 (71.6)	89 (65.9)	0.126**
- InvariableEQ5D score	15 (14.7)	14 (10.4)	
- EQ5D score decrease	14 (13.7)	32 (23.7)	
Rehospitalization, n (%)	13 (12.7)	7 (5.2)	0.038

‡ Change in functional status is the difference between admission ADL score and ADL score at hospital discharge
§ p value for non-parametric analysis Mann-Whitneytest;
** p value for Pearson chi-square test

Table 3. Indicators of Comprehensive Geriatric Assessment process

Indicators	Pre-NHI (N=102) n (%)	NHI (N=135) n (%)
Similar ADL score (assessed by internist, psychiatrist, medical rehab)	22 (20.4)	27 (19.3)
Results from TTG recorded once a week	78 (72.2)	96 (68.6)
Recorded rehabilitation activity by physiotherapist	84 (77.8)	57 (40.7)
Recorded rehabilitation activity by nurse	68 (63.0)	79 (56.4)
Recorded rehabilitation activity by family member	13 (12.0)	34 (24.3)
Discharge planning	37 (34.3)	69 (49.3)

Most of the subjects age were around 60-79 years old with a median of 69 years old, this result is in line with the demographic condition of Indonesian population projection 2010-2035 (BAPPENAS, BPS, UNFPA, 2013).[4] Proportion of subject's gender in this study appears to be in accordance to the proportion of elderly in Indonesia which shows women outnumbered men.

Median length of stay on both groups in this study did not show significant difference, but the span length of stay was shorter in NHI group

compared to pre-NHI group. In the Netherland, the average length of stay in patients aged 60 years old – 94 years old is 5.5 days – 7.9 days, and in the UK is 7.1 days – 13.5 days (EU Health Statistics, 2013).[5] This study does not compare the government insured groups because since 2009 all elderly patients who are hospitalized in state-owned hospitals are covered by government insurance.

Sahadevan et al.[6] contended that multipathologic geriatric patients with a decreased functional status will have a longer length of stay. Severity of illness (not just diagnosis) that is clearly shown on geriatric patients could not be accomodated by DRG's system. This study revealed during the NHI period more patients could be discharged for less than two weeks compared to the pre-NHI era (94 subjects [69.6%] vs. 56 subjects [54.9%]). This could be due to the strict implementation of RSCM clinical pathway and the eficiency principle in geriatric ward.

The median ADL score in both groups were similarly increased. The proportion of patients with increased ADL score in both groups showed no significant difference; nonetheless when examining the proportion of patients with ADL score decrease, NHI group was doubled compared to pre-NHI group (20.7% vs 10.8%; p 0.156). This is due to the number of patients in NHI group admitted for acute delirium, urinary incontinence, and immobility were larger compared to pre-NHI group. All of the three illness mentioned above require specific management that could not be managed in primary care ward or in regional hospital thus have to reffered to RSCM.

There was no significant difference on quality of life/EQ5D score on both groups. The median score of quality of life attained at the end of hospital care were also equal. Nonetheless as with functional status, if one examines every data subset of subjects that had an alteration in quality of life score (increased or decreased) the proportion that had a larger decrease was the NHI group compared to pre-NHI group (32 [23.7%] vs 14 [13.7%]). The number of patients with more than five geriatric giants were larger in NHI group, and also postural instability, urinary and bowel incontinence and immobility were larger in NHI group compared to pre-NHI group. That could explained partly why in NHI group there were more patients with decreased EQ5D score. It is known that postural instability, urinary incontinence, bowel incontinence, and immobility is strongly related to a person's quality of life. Hunger et al. showed the same results that multiple pathology and various geriatric giants comorbidity effected the quality of life of geriatric patients.[7]

Rehospitalization incidence was smaller in NHI group compared to pre-NHI group. Manton et al.[8] showed by implementing prospective financing or capitation (as in NHI) it decreased rehospitalization incidence significantly. Kind et al.[9] showed that the rehospitalization incidence was lower in geriatric patients with Medicare. In this case, discharge was done by transitional care in accordance to protocol and monitoring by a nurse via telephone. Eventhough, in RSCM, geriatric management guideline issued by the Ministry of Health in 2014, the technical guide on transitional patient discharge have not been addressed.[1] Detailed discharge planning is the only method that is used (according to ACC standard[= access and continuity of care] from the Joint Commission International 6th edition. In this study, the documentation on discharge planning was better in NHI group compared to pre-NHI (49.3% vs 34.3%; p 0.025).

Medical care and nursing process, which refer to the CGA concept may play role as a part in achieving higher quality of life in hospitalized geriatric patients. **Table 3** showed that rounds by integrated geriatric team once a week, which describes that the interdisciplinary communication process, was performed less than 80% both in pre-NHI and NHI group. Similar ADL scores assessed by the three professions were only 20.4% in pre-NHI and 19.3% in NHI groups. The rehabilitation activities performed by physiotherapists and nurses in NHI group is less extensive compared to pre-NHI group. One of explanation is there was discrepancy between workload and numbers of rehabilitation staff in NHI era (during study period) due to increase number of patients visiting rehabilitation outpatient's clinic. These three activities, to some

extent, represent that CGA process has not well performed in NHI era, and thus could explain that the increase of ADL and EQ5D scores were not too high as expected. Out of these limitations, there was one positive finding which showed that in NHI group the proportion of rehabilitation exercise performed by family members of geriatric patients are higher compared to those admitted in pre-NHI era. Family member's enthusiasm to involve in patient's care during hospitalization should be maintain and encourage due to the limitation of number of staffs compare to increasing number of patients hospitalized in NHI era.

CONCLUSION

Length of stay, functional status, and health related quality of life did not show any significant difference after national health insurance (NH)) implementation compare to pre-NHI era on geriatric patients hospitalized in Cipto Mangunkusumo Hospital. Rehospitalization incidence was lower after NHI implemetation. Documentation of CGA process was not yet optimal but discharge planning have been performed well.

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